



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,524	01/30/2006	Mamoru Arayashiki	NGB-39582	7126

52054 7590 12/09/2009
PEARNE & GORDON LLP
1801 EAST 9TH STREET
SUITE 1200
CLEVELAND, OH 44114-3108

EXAMINER

AKINYEMI, AJIBOLA A

ART UNIT	PAPER NUMBER
----------	--------------

2618

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

12/09/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patdocket@pearne.com
dchervenak@pearne.com

Office Action Summary	Application No. 10/566,524	Applicant(s) ARAYASHIKI ET AL.	
	Examiner AJIBOLA AKINYEMI	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Robinson (Pub. No.: US 2004/0266366A1) and Sahlman (Patent No.: US 6002923).

With respect to claims 1:

Heinonen teaches a transmitting apparatus/method (fig.1) that power- amplifies a transmitting signal, the apparatus comprising transmitting power amplifying means (fig.1, item 10, 12) having a high- frequency power amplifier , wherein the transmitting power amplifying means has a first mode of operating the high- frequency power

Art Unit: 2618

amplifier as a nonlinear amplifier (col. 4, line 12-25) and a second mode of operating the high- frequency power amplifier as a linear amplifier (col. 4, line 23-39), and in the first mode, amplitude modulates the transmitting signal and controls an average output level of the transmitting signal by a power supply voltage of the high- frequency power amplifier (col.4, line 12-25) and, in the second mode, controls an average output level of the transmitting signal before the high- frequency power amplifier and amplitude modulates the transmitting signal having the average output level controlled (col.3, line 61-col.4,line56). Heinonen did not disclose an amplitude modulated signal amplifier for selectively (i) supplying a substantially constant power supply voltage to the high-frequency amplifier in the second mode and (II) amplifying and supplying an amplified amplitude-modulated signal as the power supply voltage to the high-frequency amplifier operating in the first mode and a multiplier for generating a multiplied signal to be transmitted to the high frequency power amplifier by multiplying a phase modulated signal by an amplitude modulated signal. Robinson discloses a method of amplitude modulated signal amplifier for selectively (i) supplying a substantially constant DC power supply voltage to the high-frequency amplifier in the second mode and (II) amplifying and supplying an amplified variable voltage amplitude-modulated signal as the power supply voltage to the high-frequency amplifier operating in the first mode (Abstract and parag. 0002, 0010). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the above limitation in order to enable high overall efficiency to be achieved. Sahlman discloses a multiplier (fig.3, item 120) for generating a multiplied signal to be transmitted to the high frequency power

Art Unit: 2618

amplifier by multiplying a phase modulated signal by an amplitude modulated signal.

(fig.3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a multiplier in order to implement related functions.

With respect to claims 3 and 4:

The rejection of claim 1 is incorporated; Robinson further teaches a transmitting apparatus wherein an input level of the high- frequency power amplifier is changed according to an average output power of the transmitting signal in the first mode (parag.0009-0010).

With respect to claim 6:

Heinonen further teaches a radio communication apparatus for transmitting a transmitting signal from an antenna by radio, wherein the transmitting signal is power amplified by the transmitting apparatus is outputted to the antenna (fig.1).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Robinson (Pub. No.: US 2004/0266366A1), Sahlman (Patent No.: US 6002923) and Otaka (Pub. No.: US 20060141964A1).

With respect to claim 2:

The rejection of claim 1 is incorporated; Heinonen, Robinson and Sahlman did not teach multiplier and variable gain amplifier. Otaka teaches multiplier disposed before power amplifier and a variable gain amplifier disposed before the multiplier and in the

Art Unit: 2618

second mode, amplitude modulates the signal by the multiplier (fig.5, Parag.0052). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have multiplier and variable gain amplifier in order to amplify and combine the signals before reaching the output.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Sahlman (Patent No.: US 6002923), Robinson (Pub. No.: US 2004/0266366A1) and Admitted Prior art henceforth "Admission".

With respect to claim 5, 8:

Heinonen discloses a method of controlling a transmitting power when a transmitting signal is power amplified and outputted by a high-frequency power amplifier, the method comprising the steps of: operating the high-frequency power amplifier as a nonlinear amplifier (col. 4, line 12-25) in a first mode to amplitude modulate the transmitting signal and to control an average output level of the transmitting signal by a power supply voltage of the high-frequency power amplifier (col.4, line 12-25), wherein said power supply voltage in the first mode is based at least in part on the amplitude-modulated signal separated from the base-band modulated signal; operating the high-frequency power amplifier as a linear amplifier in a second mode (col.4, line 23-39) and before the high-frequency power amplifier, controlling an average output level of the transmitting signal and amplitude modulating the transmitting signal having the average output level controlled. Heinonen did not teach separating means for separating phase and

Art Unit: 2618

amplitude modulated signal and amplifying the amplitude modulated signal separated from the baseband modulated signal with an amplitude modulated signal amplifier; to generate an amplified variable voltage amplitude modulated signal that is to be supplied as the power supply voltage to the high-frequency amplifier operating in the first mode; establishing transmission of a substantially constant DC voltage to the amplitude modulated signal as the power supply voltage when operating in second mode wherein the high-frequency amplifier operates as a linear amplifier and before the high frequency amplifier controlling the average output level of the transmitting signal and amplitude modulate the transmitting signal having average output level controlled in the second mode. Admission discloses a separating means (fig. 5, item 21) for separating a baseband amplitude- modulated signal amplifying the amplitude modulated signal separated from the baseband modulated signal with an amplitude modulated signal amplifier (fig.5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have amplitude/phase separating means in order to separate the amplitude and phase modulated signal before transmission. Robinson discloses a amplitude modulated signal and amplifying the amplitude modulated signal separated from the baseband modulated signal with an amplitude modulated signal amplifier; to generate an amplified variable voltage amplitude modulated signal that is to be supplied as the power supply voltage to the high-frequency amplifier operating in the first mode; establishing transmission of a substantially constant DC voltage to the amplitude modulated signal as the power supply voltage when operating in second mode wherein the high-frequency amplifier operates as a linear amplifier and before the high

Art Unit: 2618

frequency amplifier controlling the average output level of the transmitting signal and amplitude modulate the transmitting signal having average output level controlled in the second mode (Abstract and parag. 0002, 0010). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the above limitation in order to enable high overall efficiency to be achieved

5. Claims 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen (Patent No.: US 5530923) and further in view of Sahlman (Patent No.: US 6002923), Robinson (Pub. No.: US 2004/0266366A1) and Camp (Patent No.: US 6295442B1).

With respect to claim 7:

The rejection of claim 1 is incorporated; Heinonen, Sahlman and Robinson did not disclose a low limit limiting circuit operable in the first mode to establish a minimum value of the amplitude modulated signal to maintain operation of the high-frequency power amplifier as the nonlinear amplifier. Camp discloses amplitude limiter (fig.5, item 44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a limiter in order to maintain the operation of high frequency amplifier.

With respect to claims 9, 10:

Sahlman discloses a method further comprising multiplying the variable voltage, amplified amplitude-modulated signal by a gain control signal before the amplified amplitude-modulated signal is supplied to the amplitude-modulated signal amplifier and

Art Unit: 2618

subsequently delivered as the power supply voltage of the high-frequency power amplifier in the first mode (fig.3, col.4, lines 40-60).

Response to Arguments

6. Applicant's arguments with respect to claims 1, 5 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AJIBOLA AKINYEMI whose telephone number is

Art Unit: 2618

(571)270-1846. The examiner can normally be reached on monday- friday (8.30-5pm)
Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, YUWEN PAN can be reached on (571) 272-7855. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA
/Yuwen Pan/
Primary Examiner, Art Unit 2618